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EXAMINER	
TRAN, TRANG U	

ART UNIT	PAPER NUMBER
2614	

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/933,198	Applicant(s) HIBI, TAKETOSHI	
	Examiner Trang U. Tran	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *29-39* is/are allowed.

6)☒ Claim(s) *1-16 and 19* is/are rejected.

7)☒ Claim(s) *17,18 and 20-28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed March 24, 2004 have been fully considered but they are not persuasive.

In re page 5, applicant argues that the light valve drive merely supplies modulation control signals to the light valve 24, there is no light guiding function served by the light valve drive 36.

In response, the examiner respectfully disagrees. Stanton discloses in col. 2, lines 51-67 that "color wheel 16 comprises three 120 segments of dichroic filters of different colors, in this case red, green and blue, color wheel 16 is mounted for rotation about its axis and is driven by a wheel drive system 18 which includes an output 20 which represents the position of color wheel 16 and thus the particular color that is positioned in the output path of lamp 12". From the above passage, it is clear that the light guiding function is met by the wheel drive system 18 of Stanton. The citation of the light valve drive 36 is typographical error.

In re page 5, applicant argues that also Stanton and Sampsell cannot teach or suggest the feature of "means for adjusting the temporal average intensity of the white light" as the Examiner asserted.

In response, the examiner respectfully disagrees. Sampsell discloses that in column 4, lines 5-38 that "light beam 30 is received, in this case, only a percentage of the red light is filtered out, for example, we will assume the 10% of the red light remains in path 30, only red light will be received at modulator 18A,

but some red light will remain with the blue and green components, this is repeated for blue at filter 34, leaving 10% in path 30, filter 38 is inserted between the reflective surface 36 and filter 34, filter 38 reflects 90% of the green light to modulator 18C, leaving 10% in path 30, **the portion of beam 30 that remains after passing through the filter 38 is white light that is 10% of the original beam's intensity, this is reflected to modulator 18D. Again, a control function is need to determine when modulator 18D is on and when it has reflected enough white light to raise the minimum intensity to the require level**". From the above passage, it is clear that **the control function** as taught by Sampsell is adjusting the temporal average intensity of the white light as recited in claim 1.

In re page 5-6, applicant argues that claims 3-8 depend from independent claim 1 directly or indirectly, therefore, these claims dependent claims are over Stanton and Sampsell for at least the reasons stated with respect to claim 1.

In response, as discussed in claim 1 above, Stanton and Sampsell disclose all the limitations of claim 1.

In re page 6, applicant argues that claim 3 recites, in part, "means for generating the white light includes means for combining light reflected at the sequential color selecting means."

In response, the examiner respectfully disagrees. Sampsell discloses that in column 4, lines 5-38 that "light beam 30 is received, in this case, only a percentage of the red light is filtered out, for example, **we will assume the 10% of the red light remains in path 30**, only red light will be received at modulator

18A, but some red light will remain with the blue and green components, this is repeated for blue at filter 34, **leaving 10% in path 30**, filter 38 is inserted between the reflective surface 36 and filter 34, filter 38 reflects 90% of the green light to modulator 18C, **leaving 10% in path 30, the portion of beam 30 that remains after passing through the filter 38 is white light that is 10% of the original beam's intensity, this is reflected to modulator 18D. Again, a control function is need to determine when modulator 18D is on and when it has reflected enough white light to raise the minimum intensity to the require level**". From the above passage, it is clear that **the portion of beam 30 that remains after passing through the filter 38 is white light that is 10% of the original beam's intensity** as taught by sampsell is means for "generating the white light includes means for combining light reflected at the sequential color selecting means" as recited in claim 3.

In re pages 6-7, applicant argues that claim 4 recites, in part, "means for adjusting the temporal average intensity of the white light adjusts the light reflected at the sequential color selecting means." However, it is clear that Sampsell cannot be relied upon to teach or suggest "reflected light" at all as demonstrated above. Also in Sampsell, the mount of white light is fixed and is determined by the size of the transparent region of the color wheel as clearly demonstrated above.

In response, the examiner respectfully disagrees. Sampsell discloses that in column 4, lines 5-38 that "light beam 30 is received, in this case, only a percentage of the red light is filtered out, for example, **we will assume the 10%**

of the red light remains in path 30, only red light will be received at modulator 18A, but some red light will remain with the blue and green components, this is repeated for blue at filter 34, **leaving 10% in path 30**, filter 38 is inserted between the reflective surface 36 and filter 34, filter 38 reflects 90% of the green light to modulator 18C, **leaving 10% in path 30, the portion of beam 30 that remains after passing through the filter 38 is white light that is 10% of the original beam's intensity, this is reflected to modulator 18D. Again, a control function is need to determine when modulator 18D is on and when it has reflected enough white light to raise the minimum intensity to the require level**". From the above passage, it is clear that **the portion of beam 30 that remains after passing through the filter 38 is white light that is 10% of the original beam's intensity and the control function** as taught by sampsell discloses all the limitations of claim 4.

In re page 7, applicant argues that claim 8 recites, in part, "a controller for adjusting the temporal average intensity depending on the contents of the image signal representing the image to be projected." There is no discussion adjusting of the color components based on the image content in stanton.

In response, as discussed in claims 1 and 4 above, a controller for adjusting the temporal average intensity depending on the contents of the image signal representing the image to be projected is met by the control function of Sampsell.

In re page 8, applicant argues that neither Stanton nor Sampsell may be relied upon to teach or suggest the feature of "adjusting means which reduce the temporal average intensity of the reflected light" as recited in claim 9 as well.

In response, the examiner respectfully disagrees. Sampsell discloses that in column 4, lines 5-38 that "light beam 30 is received, in this case, only a percentage of the red light is filtered out, for example, **we will assume the 10% of the red light remains in path 30**, only red light will be received at modulator 18A, but some red light will remain with the blue and green components, this is repeated for blue at filter 34, **leaving 10% in path 30**, filter 38 is inserted between the reflective surface 36 and filter 34, filter 38 reflects 90% of the green light to modulator 18C, **leaving 10% in path 30, the portion of beam 30 that remains after passing through the filter 38 is white light that is 10% of the original beam's intensity, this is reflected to modulator 18D. Again, a control function is need to determine when modulator 18D is on and when it has reflected enough white light to raise the minimum intensity to the require level**". From the above passage, it is clear that **the portion of beam 30 that remains after passing through the filter 38 is white light that is 10% of the original beam's intensity and the control function** as taught by sampsell discloses all the limitations of claim 9.

In re page 9, applicant argues that claim 10 depend from independent claim 9, therefore, claim 10 is also distinguishable over Stanton and Sampsell for at least the reasons stated with respect to claim 9.

In response, as discussed in claim 9 above, Stanton and Sampsell disclose all the limitations of claim 9 and also "the rate of reduction by the adjusting means is variable" is met by **the white light that reflected to raise enough minimum intensity to the required level** of Sampsell.

In re page 10, applicant argues that claim 2 depends from independent claim 1 and that claim 1 has been demonstrated to be distinguishable over Stanton and Sampsell. Bos has not been, and indeed cannot be, relied upon to correct for the deficiencies of Stanton and Sampsell.

In response, as discussed in claim 1 above, Stanton and Sampsell disclose all the limitations of claim 1.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanton (US Patent No. 5,917,558) in view of Sampsell (US Patent No. 5,233,385).

In considering claim 1, Stanton discloses all the claimed subject matter, note 1) the claimed a light source for emitting light containing different color components is met by the lamp 12 (Fig. 1, col. 2, lines 51-54), 2) the claimed a sequential color selecting means for sequentially passing different color

components of the light from said light source is met by the color wheel 16 which comprises three 120 segments of dichroic filters of different colors, in this case red, green and blue (Fig. 1, col. 2, line 54 to col. 3, line 7), 3) the claimed means for generating white light is met by the lamp 12 and the reflector 14 (Fig. 1, col. 2, lines 51-54), 4) the claimed a spatial light modulator is met by the light valve 24 which is modulate the sequentially red, green and blue output beam 22 accordance with the video information (Fig. 1, col. 2, line 54 to col. 3, line 32), and 5) the claimed means for guiding the light having passed through the sequential color selecting means to said spatial light modulator is met by the wheel drive system 18 (Fig. 1, col. 2, line 51 to col. 3, line 32).

However, the admitted prior art explicitly does not disclose the claimed means for adjusting the temporal average intensity of the white light and wherein said spatial light modulator spatially modulates the light having passed through the sequential color selecting means and the white light with its temporal average intensity having been adjusted, to generate image light.

Sampsell teaches that the present invention disclosed herein comprises enhancing color projection system with use of white light. A portion of the original white light beam is preserved to raise the overall brightness of the scene, the filtered beams of red, green and blue are used to color the scene to the appropriate extent, the original white light beam can be filtered either spatially or temporally, with either a portion of time or illuminated surface area being reserved for white light (Fig. 1, col. 1, line 65 to col. 2, line 5) and for projection systems that are to be viewed directly by the eye, such as televisions, or movie

projectors, it is possible that the order of presentation of the white light and the primary additive colors will be adjusted to achieve the most pleasing psychophysical presentation (col. 2, line 24 to col. 4, line 38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the using of white light as taught by Sampsell into Stanton's system in order to provide better brightness without having too great an effect upon color saturation.

In considering claim 3, the claimed wherein said means for generating the white light includes means for combining light the reflected at the sequential color selecting means and the light having passed through the sequential color selecting means is met by the color wheel of Fig. 1B which combines the percentage of the total time slot allocated for each color is set aside for a "white" field, this is actually a clear, or unfiltered, section of the wheel (Fig. 1B, col. 2, lines 49-68) of Sampsell.

In considering claim 4, the claimed wherein said means for adjusting the temporal average intensity of the white light adjusts the light reflected at the sequential color selecting means, to thereby adjust the temporal average intensity of the white light indirectly is met by the white light and the primary additive colors will be adjusted to achieve the most pleasing psychophysical presentation and a control function is needed to determine when it has reflected enough white light to raise the minimum intensity to the required level (col. 2, line 24 to col. 4, line 38) of Sampsell.

In considering claim 5, the claimed wherein said sequential color selecting means has a plurality of color filters, which are formed of dichroic filters, and the light reflected at an incident surface of the sequential color selecting means is guided to an exit surface of the sequential color selecting means so that it is combined with the light having passed through the sequential color selecting means is met by the color wheel 16 which comprises three 120 segments of dichroic filters of different colors, in this case red, green and blue (Fig. 1, col. 1, line 63 to col. 2, line 6 and col. 2, line 54 to col. 3, line 7) of Stanton.

In considering claim 6, the claimed wherein said sequential color selecting means includes a plate member held rotatably about an axis of rotation, said plate member is divided into three or more regions by lines extending in radial directions from the axis of rotation, and at least three of the regions have color filters of three primary colors of red, green and blue is met by the color wheel of Fig. 1B which combines the percentage of the total time slot allocated for each color is set aside for a "white" field, this is actually a clear, or unfiltered, section of the wheel (Fig. 1B, col. 2, lines 49-68) of Sampsell.

In considering claim 7, the claimed wherein said spatial light modulator comprises a digital micromirror device is met by the modulator 18 is the DMD (Fig. 2A, col. 3, line 22 to col. 4, line 38) of Sampsell or col. 1, lines 42-62 of Stanton.

In considering claim 8, the claimed further including a controller for adjusting the temporal average intensity depending on the contents of an image signal representing the image to be projected is met by the light valve drive 26

which receives its video information from a video input 28 (Fig. 1, col. 2, line 54 to col. 3, line 32) of Stanton.

Claim 9 is rejected for the same reason as discussed in claims 1 and 3-4.

In considering claim 10, the claimed wherein the rate of reduction by the adjusting means is variable is met by the percentage of color saturation will be reduced to increase the brightness of the image and it is up to the designer to determine at what point he or she has received the maximum brightness possible, without detrimental decrease in color saturation, so the percentage of adjusting means is varied (col. 4, lines 5-44) of Sampsell.

Claim 11 is rejected for the same reason as discussed in claims 1 and 3-4.

Claim 12 is rejected for the same reason as discussed in claim 8.

Claim 13 is rejected for the same reason as discussed in claim 8.

Claim 14 is rejected for the same reason as discussed in claim 8.

In considering claim 15, the claimed wherein said light intensity adjuster is configured to adjust the intensity of the intensity adjusted light in one or bothe of duration and attenuation level is met by the control function is needed to determine when it has reflected enough white light to raise the minimum intensity to the required level (col. 2, line 24 to col. 4, line 38) of Sampsell.

Claim 19 is rejected for the same reason as discussed in claim 6.

4. Claims 2 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanton (US Patent No. 5,917,558) in view of Sampsell (US Patent No. 5,233,385) and further in view of Bos et al. (US Patent No. 5,387,920).

In considering claim 2, the combination of Stanton and Sampsell disclose all the limitation of the instant invention, except for providing the claimed wherein said means for adjusting the temporal average intensity of the white light includes a liquid crystal shutter. Bos et al teach that in the third preferred embodiment of the switchable color filter, none of the three linear polarizing filters (liquid crystal shutters) has complementary polarization states or axes and each polarizing filter has one polarization axis which transmitted white light, all four of the output states provide a selection of light of three different colors and white light at the output of the switchable color filter (Fig. 4, col. 4, lines 17-23 and col. 16, line 61 to col. 19, line 22). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the three linear polarizing filters (liquid crystal shutters) for adjust the white light as taught by Bos et al into the combination of Stanton and Sampsell' system in order to provide output states of light of three different colors and white light to form an image in full color and better brightness.

Claim 16 is rejected for the same reason as discussed in claim 2.

Allowable Subject Matter

5. Claims 17-18 and 20-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 29-39 are allowed.

The independent claim 29 identifies the distinct features: "a second light source for emitting a second light of a plurality of color component; a light

intensity adjuster configured to dynamically adjust an intensity of the second light as an intensity adjust light; and a spatial light modulator configured to spatially modulate the pass-thru light and the intensity adjusted light to generate an image light". The closest prior art, Stanton (US Patent No. 5,917,558) and Sampsell (US Patent No. 5,233,385), either singularly or in combination, fail to anticipate or render the above underlined limitation obvious.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang U. Tran whose telephone number is (703) 305-0090. The examiner can normally be reached on 8:00 AM - 5:30 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MICHAEL H. LEE
PRIMARY EXAMINER

TT TT
June 14, 2004